

# NOAA's Coastal Assessment and Data Synthesis System

## Estuarine Bathymetry

### Digital Geography Description

Estuarine bathymetry was developed by the Special Projects Office (SPO) of the National Ocean Service (NOS) as part of a project to produce readily available bathymetry. Seventy of the approximately 130 estuaries within the conterminous U.S. are available. Those not included had less than 80% coverage of digital sounding data needed to support detailed bathymetric processing. Digital Elevation Models of Bathymetry previously processed by SPO were reprojected and converted to mass points and TINs (Triangulated Irregular Network) to be used with the Coastal Assessment and Data Synthesis (CA&DS) system.

Although best known as a navigational tool, bathymetric data adds a vertical dimension to geographic mapping and modeling of estuaries and can be used as a background 3-Dimensional surface for draping spatial information about estuaries, such as NOAA's National Status and Trends (NS&T) sampling sites or tide prediction stations, both available in CA&DS. Bathymetric data are also a critical component of hydrodynamic models and can serve as the lower boundary of the water column in visualizing or calculating the volume, circulation and movement of water in an estuary. They also have a number of other uses. For example, hydrodynamic models are necessary to understand or predict the movement of oil and hazardous materials, temperature and salinity distributions, the migration of animals, or for modeling storm surge and tsunami effects, to name a few.

All files obtained are geo-referenced to NOAA's Coastal Assessment Framework (CAF). The data are available for one distinct spatial aggregation as outlined below. To view the data dictionary of click on the link below or refer to NOAA's Coastal Assessment and Data Synthesis System (<http://cads.nos.noaa.gov>).

- 1) Coastal Watersheds (from NOAA's Coastal Assessment Framework), ([http://spo.nos.noaa.gov/projects/cads/fgdc\\_metadata/bathy\\_metadata\\_d.html](http://spo.nos.noaa.gov/projects/cads/fgdc_metadata/bathy_metadata_d.html))

### Source(s) of Information

Estuarine Bathymetry Product Description, MapFinder Site  
(<http://mapindex.nos.noaa.gov/MapFinderHTML/surround/bathy/bathy.htm>)

### Data Processing

Spatial geographies in the Coastal Assessment and Data Synthesis (CA&DS) system are standardized to an unprojected (geographic) North American Datum 83 (NAD 83) spheroid. Bathymetry mass point shapefiles were created by converting geographic North American Datum 27 (NAD27) gridded bathymetry at 90-meter grid cell resolution, to NAD 83 point shapefiles for use in ArcView. The conversion from an NAD 27 grid to an NAD 83 shapefile was accomplished using the projection and translation features of MapInfo, a commercial Geographic Information System (GIS) software package. With the exception of Chesapeake Bay, divided into six separate files, bathymetry mass point shapefiles are distributed by Estuarine Drainage Area (EDA).

Bathymetry TIN (Triangulated Irregular Network) files were created from mass point shapefiles for the purpose of 3-dimensional visualization. The fundamental difficulties in creating a TIN with a smooth and accurate transition between tidal and landward areas referenced to the CAF 1:250,000 scale shoreline are discussed elsewhere [see Source(s) of Information]. For purposes of display, the intertidal gap between where bathymetry mass points end and the CAF shoreline begins was artificially closed by making the

height of the shoreline to equal the highest or nearly the highest bathymetry sounding. In other words, because many estuarine bathymetry soundings had values greater than zero, the land surrounding the estuary was raised up. Some vertical exaggeration at the shoreline edge, where the land may appear to drop off sharply, is expected. For purposes other than display, if greater resolution than 90 meters is required, or if the area of interest lies specifically in intertidal areas users may download either bathymetry mass point shapefiles [<http://spo.nos.noaa.gov/projects/cads/description.html#bathy>], or access NAD 27 gridded bathymetry at both 90 meter and 30 meter grid cell resolution by consulting the Source(s) of Information listed above.

### **Contact(s) on Data Processing**

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### **Quality Control**

Bathymetry mass point shapefiles were inspected for datum shifts and outlying points to insure that they matched the 1:250,000-scale shoreline used in the Coastal Assessment Framework (CAF). Three bathymetry shapefiles did not initially match the CAF shoreline: the Colombia River EDA (P260x), Sarasota Bay EDA (G060x), and Perdido Bay EDA (G140x). In two cases, Sarasota Bay and Perdido Bay, the mismatch was due entirely to the original source grids having been clipped to the NOAA medium resolution (c. 1:80,000 scale) shoreline. In the case of the Colombia River, the mismatch was partially due to its being clipped to a medium resolution shoreline and partially because of datum shifts in conversion to the NAD 83 spheroid. The datum shift in the Colombia River EDA was corrected and all three bays were subsequently clipped to the CAF shoreline using GIS processes.

### **For Additional Information:**

For additional information, refer to NOAA's [Coastal Assessment and Data Synthesis \(CA&DS\) System](#), or contact:

The [CA&DS](#) team.  
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